UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/196,574	11/20/1998	KIRAN CHALLAPALI	PHA-23,540	9299

24737 7590 11/19/2003

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
LEE, RICHARD J	
ART UNIT	PAPER NUMBER
2613	20

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/196,574	Applicant(s) Challapali et al
	Examiner Richard Lee	Art Unit 2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Aug 20, 2003*

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above, claim(s) ______ is/are withdrawn from consideratio

5) ☐ Claim(s) ______ is/are allowed.

6) ☒ Claim(s) *1-16* is/are rejected.

7) ☐ Claim(s) ______ is/are objected to.

8) ☐ Claims ______ are subject to restriction and/or election requirement

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on ______ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on ______ is: a) ☐ approved b) ☐ disapproved by the Examine

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ______ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *28*

4) ☐ Interview Summary (PTO-413) Paper No(s). ______

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other:

1. The request filed on August 20, 2003 for a Request for Continued Examination (RCE) is acceptable and a RCE has been established. An action on the RCE follows.

2. The applicants' arguments from the amendment filed July 30, 2003 have been noted and considered, but are deemed moot in view of the following new grounds of rejections.

3. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For examples:

(1) claim 1, line 19, "the 8 X 8 DCT blocks" shows no clear antecedent basis;

(2) claim 4, line 14, "the 8 X 8 DCT blocks" shows no clear antecedent basis;

(3) claim 7, line 14, "the 8 X 8 DCT blocks" shows no clear antecedent basis;

(4) claim 8, line 13, "the 8 X 8 DCT blocks" shows no clear antecedent basis;

(5) claim 11, line 15, "the 8 X 8 DCT blocks" shows no clear antecedent basis; and

(6) claim 14, line 13, "the 8 X 8 DCT blocks" shows no clear antecedent basis.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stenger of record (DE 3608489A1) in view of Katata et al of record (5,815,601), Woodfill et al of record (6,215,898), and Chun et el (6,038,258).

Stenger discloses a method of improving image segmentation of a video telephone scene as shown in Figures 3 and 4, and substantially the same image processing device and system, method of encoding a stereo pair of images, computer executable process steps to process image data from a stereo pair of images, and apparatus for processing a stereo pair of images as claimed in claims 1-16, comprising substantially the same input which receives a stereo pair of images (see 10 of Figure 3 and 11, 12 of Figure 4); a foreground extractor (13-15 of Figure 4 and see page 4, lines 4-10 of translated article) coupled to the input which compares location of like pixel information in each image to determine which pixel information is foreground pixel information and which pixel information is background pixel information, wherein the foreground extractor computes the difference in location of like pixels in each image and selects the foreground pixels as those pixels whose difference in location falls above a threshold distance; wherein the stereo pair of images are received from a stereo pair of cameras spaced closely from one another in a video conference system (see Figure 3); the extracting includes identifying the location of like pixels in each of the stereo pair of images, calculating the difference between the locations of like pixels, and determining for each set of like pixels whether the difference between locations falls above a threshold difference, and if so identifying those pixels as foreground information (see page 4, lines 4-10 of translated article); a memory which stores process steps (i.e., as provided to

carry out functions within Figure 4), and a processor which executes the process steps stored in the memory so as to extract foreground information from the stereo pair of images, and if the difference in location is above a set threshold the pixel information is identified as foreground pixel information, if below the set threshold the pixel information is determined to be background pixel information (see page 4, lines 4-10 of translated article).

Stenger does not particularly disclose, though, the followings:

(a) a DCT block classifier coupled to the foreground extractor which determines which DCT blocks of at least one of the images contain a threshold amount of foreground information; and an encoder coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground pixel information with a first high level of quantization and which encodes the DCT blocks having less than the threshold amount of foreground information as background information at a second lower quantization level relative to the first high level of quantization, the encoder encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization relative to the first high level of quantization, wherein the encoding step encodes the entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information, and the encoder provides bit stream information for decoding of both the high level of quantization and lower level of quantization that are encoded as claimed in claims 1, 4, 7, 8, 11, 12, and 14-16;

(b) wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x 8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information as claimed in claims 6 and 10;

(c) wherein at least a majority of a bandwidth is encoded at the first high quantization level and the first high/higher level of quantization as claimed in claims 1, 4, 7, 8, 11, and 14;

(d) wherein a contour of a participant whose image is at least part of the stereo pair of images is not represented by a precise number of pixels but rather the contour is defined by the 8 X 8 DCT blocks as claimed in claims 1, 4, 7, 8, 11, and 14.

Regarding (a) and (b), Katata et al discloses an image encoder as shown in Figure 1, and teaches the conventional use of a DCT block classifier (i.e., within 106 of Figure 1, and see column 5, lines 1-4) coupled to a foreground extractor (i.e., 101, 102 of Figure 1 and see column 4, line 45 to column 5, line 4) for determining which DCT blocks of at least one of the images contain a threshold amount of foreground information; an encoder (i.e, within 106 of Figure 1, and see column 5, lines 1-4) coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground information with a first high level of quantization and which encodes the DCT blocks having less than the threshold amount of foreground information as background information (i.e., background information is being provided by the threshold 15 of Figure 4 of Stenger et al) at a second lower quantization level (see column 1, lines 12-25,

columns 7-8) relative to the first high level of quantization (i.e., different quantization step sizes pertaining to a selected area of interest are assigned, with high and low quantization level selections, see column 7, line 49 to column 8, line 24, column 9, line 38 to column 10, line 13), the encoder encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization (see column 1, lines 12-25, columns 7-8), wherein the encoding step encodes the entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information (see column 1, lines 12-58, columns 7-8); wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x 8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information (see column 1, lines 12-58, columns 7-8). In addition, Katata et al teaches the conventional use of the encoder providing bit stream information (i.e., the different quantization levels assigned for the specific areas are being transmitted to the decoder as shown in Figures 2 and 18) for decoding of both the high level of quantization and lower level of quantization that are encoded. Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger and Katata et al references in front of him/her and the general knowledge of stereo image processings within videophone environments, would have had no

difficulty in providing the DCT block classifier, an encoder for providing different quantization level processings for foreground and background image data, and a corresponding decoder for decoding of both the high level of quantization and lower level of quantization as taught by Katata et al for the stereo image videophone system within Stenger for the same well known image compressions purposes as claimed.

Regarding (c), it is noted that Katata et al does teach the particular finer quantization for areas of interest, such as the facial region (i.e., foreground data, see column 1, lines 12-25, column 4, lines 45-61, column 5, lines 5-20, column 7, line 26 to column 8, line 23, column 9, line 36 to column 10, line 13, Figures 1, 13, 14b, 17). It is well recognized in the art that finer quantization requires more bandwidth. And though Katata is silent as to where a majority of the bandwidth is encoded, it is nevertheless considered obvious that a majority of a bandwidth is encoded for the foreground data (i.e., facial region) since a finer quantization level is required. In any event, Woodfill et al discloses a data processing system and teaches the conventional allocation of a majority of bandwidth for foreground information over background information (see column 123, lines 34-49). Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, and Woodfill et al references in front of him/her and the general knowledge of foreground/background encoding of video data, would have had no difficulty in using the particular majority of bandwidth allocation for foreground data as taught by Woodfill et al to provide a majority of a bandwidth to be encoded at the first high quantization level and the first high/higher level of quantization for the foreground data of Katata et al and

Stenger for the same well known image quality control and bandwidth allocation control purposes as claimed.

Regarding (d), it is noted that though silent in Katata et al, the contour DCT block coding as claimed is nevertheless considered obviously provided by the particular position, shape and/or facial image data coding within the area position and shape encoding section 102, parameter adjusting section 104 and encoding section 106 of Figure 1 of Katata et al (see column 4, line 45 to column 5, line 20 of Katata et al). In any event, Chun et al discloses an encoding system as shown in Figure 1 and teaches the conventional use of encoder 20 for encoding contour data with DCT transformations (see column 4, lines 38-44). And since Katata et al teaches 8 X 8 DCT block transformations, such specific block transformations may certainly be provided within Chun et al to thereby render obvious the claimed limitations. Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, Woodfill et al, and Chun et al references in front of him/her and the general knowledge of contour codings, would have had no difficulty in providing the contour defined 8 X 8 DCT block coding as taught by the combination of Katata et al and Chun et al for the stereo image videophone system of Stenger for the same well known contour image compression purposes as claimed.

6. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stenger of record (DE 3608489A1) in view of Katata et al of record (5,815,601), Monro et al of record (6,078,619), and Chun et al (6,038,258).

Stenger discloses a method of improving image segmentation of a video telephone scene as shown in Figures 3 and 4, and substantially the same image processing device and system, method of encoding a stereo pair of images, computer executable process steps to process image data from a stereo pair of images, and apparatus for processing a stereo pair of images as claimed in claims 1-16, comprising substantially the same input which receives a stereo pair of images (see 10 of Figure 3 and 11, 12 of Figure 4); a foreground extractor (13-15 of Figure 4 and see page 4, lines 4-10 of translated article) coupled to the input which compares location of like pixel information in each image to determine which pixel information is foreground pixel information and which pixel information is background pixel information, wherein the foreground extractor computes the difference in location of like pixels in each image and selects the foreground pixels as those pixels whose difference in location falls above a threshold distance; wherein the stereo pair of images are received from a stereo pair of cameras spaced closely from one another in a video conference system (see Figure 3); the extracting includes identifying the location of like pixels in each of the stereo pair of images, calculating the difference between the locations of like pixels, and determining for each set of like pixels whether the difference between locations falls above a threshold difference, and if so identifying those pixels as foreground information (see page 4, lines 4-10 of translated article); a memory which stores process steps (i.e., as provided to

carry out functions within Figure 4), and a processor which executes the process steps stored in the memory so as to extract foreground information from the stereo pair of images, and if the difference in location is above a set threshold the pixel information is identified as foreground pixel information, if below the set threshold the pixel information is determined to be background pixel information (see page 4, lines 4-10 of translated article).

Stenger does not particularly disclose, though, the followings:

(a) a DCT block classifier coupled to the foreground extractor which determines which DCT blocks of at least one of the images contain a threshold amount of foreground information; and an encoder coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground pixel information with a first high level of quantization and which encodes the DCT blocks having less than the threshold amount of foreground information as background information at a second lower quantization level relative to the first high level of quantization, the encoder encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization relative to the first high level of quantization, wherein the encoding step encodes the entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information, and the encoder provides bit stream information for decoding of both the high level of quantization and lower level of quantization that are encoded as claimed in claims 1, 4, 7, 8, 11, 12, and 14-16;

(b) wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x 8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information as claimed in claims 6 and 10;

(c) wherein at least a majority of a bandwidth is encoded at the first high quantization level and the first high/higher level of quantization as claimed in claims 1, 4, 7, 8, 11, and 14; and

(d) wherein a contour of a participant whose image is at least part of the stereo pair of images is not represented by a precise number of pixels but rather the contour is defined by the 8 X 8 DCT blocks as claimed in claims 1, 4, 7, 8, 11, and 14.

Regarding (a) and (b), Katata et al discloses an image encoder as shown in Figure 1, and teaches the conventional use of a DCT block classifier (i.e., within 106 of Figure 1, and see column 5, lines 1-4) coupled to a foreground extractor (i.e., 101, 102 of Figure 1 and see column 4, line 45 to column 5, line 4) for determining which DCT blocks of at least one of the images contain a threshold amount of foreground information; an encoder (i.e, within 106 of Figure 1, and see column 5, lines 1-4) coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground information with a first high level of quantization and which encodes the DCT blocks having less than the threshold amount of foreground information as background information (i.e., background information is being provided by the threshold 15 of

Figure 4 of Stenger et al) at a second lower quantization level (see column 1, lines 12-25, columns 7-8) relative to the first high level of quantization (i.e., different quantization step sizes pertaining to a selected area of interest are assigned, with high and low quantization level selections, see column 7, line 49 to column 8, line 24, column 9, line 38 to column 10, line 13), the encoder encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization (see column 1, lines 12-25, columns 7-8), wherein the encoding step encodes the entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information (see column 1, lines 12-58, columns 7-8); wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x 8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information (see column 1, lines 12-58, columns 7-8). In addition, Katata et al teaches the conventional use of the encoder providing bit stream information (i.e., the different quantization levels assigned for the specific areas are being transmitted to the decoder as shown in Figures 2 and 18) for decoding of both the high level of quantization and lower level of quantization that are encoded. Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger and Katata et al references in front of him/her and the general knowledge of stereo image processings within videophone environments, would have had no

difficulty in providing the DCT block classifier, an encoder for providing different quantization level processings for foreground and background image data, and a corresponding decoder for decoding of both the high level of quantization and lower level of quantization as taught by Katata et al for the stereo image videophone system within Stenger for the same well known image compressions purposes as claimed.

Regarding (c), it is noted that Katata et al does teach the particular finer quantization for areas of interest, such as the facial region (i.e., foreground data, see column 1, lines 12-25, column 4, lines 45-61, column 5, lines 5-20, column 7, line 26 to column 8, line 23, column 9, line 36 to column 10, line 13, Figures 1, 13, 14b, 17). It is well recognized in the art that finer quantization requires more bandwidth. And though Katata is silent as to where a majority of the bandwidth is encoded, it is nevertheless considered obvious that a majority of a bandwidth is encoded for the foreground data (i.e., facial region) since a finer quantization level is required. In any event, Monro et al discloses an object oriented video system and teaches the conventional use of a bit rate manager 42 of Figure 1 for allocation of a majority of bandwidth for foreground information over background information (see column 2, lines 55-63, column 5, lines 30-37, column 6, lines 7-17). Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, and Monro et al references in front of him/her and the general knowledge of foreground/background encoding of video data, would have had no difficulty in using the particular majority of bandwidth allocation for foreground data as taught by Monro et al to provide a majority of a bandwidth to be encoded at the first high quantization level and the

first high/higher level of quantization for the foreground data of Katata et al and Stenger for the same well known image quality control and bandwidth allocation control purposes as claimed.

Regarding (d), it is noted that though silent in Katata et al, the contour DCT block coding as claimed is nevertheless considered obviously provided by the particular position, shape and/or facial image data coding within the area position and shape encoding section 102, parameter adjusting section 104 and encoding section 106 of Figure 1 of Katata et al (see column 4, line 45 to column 5, line 20 of Katata et al). In any event, Chun et al discloses an encoding system as shown in Figure 1 and teaches the conventional use of encoder 20 for encoding contour data with DCT transformations (see column 4, lines 38-44). And since Katata et al teaches 8 X 8 DCT block transformations, such specific block transformations may certainly be provided within Chun et al to thereby render obvious the claimed limitations. Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, Monro et al, and Chun et al references in front of him/her and the general knowledge of contour codings, would have had no difficulty in providing the contour defined 8 X 8 DCT block coding as taught by the combination of Katata et al and Chun et al for the stereo image videophone system of Stenger for the same well known contour image compression purposes as claimed.

7. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications intended for entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m, with alternate Fridays off.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group customer service whose telephone number is (703) 306-0377.

RICHARD LEE
PRIMARY EXAMINER

Richard Lee/rl

11/14/03